

Contracting Changes How Farms Do Business

Increased contracting with agribusinesses has changed the way farms do business. Contracting can potentially increase efficiency in the food system and provide a means of quickly transmitting consumer preferences to farms. However, farm operators lose some managerial independence. Farms of all sizes have contracts, but contracting is more prevalent on larger farms. In some sectors, contracting seems to have encouraged geographic shifts in production.

Traditionally, independent farm operators exercised complete control over their production and marketing decisions. Each farmer decided what kind of seed, fertilizer, pesticide, or breeding stock to use. When crops and livestock were ready for market, they were sold to the highest bidder at a local market. In recent years, agriculture has become more “industrialized.” Farm producers are becoming tied more closely to agribusinesses that process and market food products by arrangements that coordinate the various stages of the food production and marketing system. Industrialization is characterized by vertical integration between farms and processors through the use of contracts, strategic alliances, joint ventures, and franchising.

Early in the 1900’s, the food production and marketing system delivered mainly generic farm products that consumers prepared at home. In recent years, consumers have changed their food consumption habits to include a wider variety of food products, more processed foods, and more food eaten away from home. An increasingly complex food processing and distribution system developed to meet this change in demand. As raw agricultural commodities produced by farms were transformed by nonfarm businesses into specific food products that consumers want, the direct link between farms and consumers had weakened. In recent years, agribusinesses have sought closer ties with farm producers through contracting and vertical integration to increase efficiency and ensure steady supplies of commodities with specific attributes. Through this process, farmers are becoming more closely integrated into the food-supply chain, and they are being asked to pay more attention to consumer demands for specific product attributes. Consequently, the distinctions between farms and nonfarm businesses are blurring.

Contracting Coordinates Food Production

Agricultural contracts are agreements between farms and companies or other farmers that specify conditions of producing and/or marketing an agricultural product. Food processors and other agribusinesses use contracts to coordinate production so as to produce known quantities of standardized products with specific attributes. Contracts provide direct feedback on market preferences and rewards to those who respond. By this means, contracts forge a stronger, more direct link between farms and urban consumers of food and fiber products. By replacing cash transactions in the open market, contracting offers farm operators the advantages of reducing the risks of unknown production costs for inputs, price swings for products, and problems in seeking a market. By assuring the price in advance, or by receiving a fee for services, farmers also reduce the risk of unknown income. For contractors (primarily processors and packers), these arrangements assure a ready supply of uniform, high-quality farm products and ease inventory management problems.

There are generally two types of contracts—marketing and production. Marketing contracts are verbal or written agreements between a contractor and a grower establishing a price formula in advance of the product being delivered. Under marketing contracts, the contractee (farmer) retains ownership of the product and has a large degree of decision-making control over the production process, but has a known market and price. Typically, a production contract requires the contractee (producer) to relinquish most control over production decisions, and the producer does not own the commodity being produced. In exchange, the farmer usually receives an incentive-based fee for production services, and the contractor reimburses a portion of the farm’s operating expenses. In addition, depending on contract terms, farmers can benefit from technical advice, managerial expertise, and access to technological advances such as high-quality breeding stock, that may not otherwise be readily available. A further advantage of production contracts is that the

grower and contractor share risks of both production and marketing of the commodity, one reason why using contracts has become so popular.

Contracting Is Widespread

Contracting has been a significant and growing part of U.S. agriculture since at least 1960. Today more than 1 in 10 farm operators report income from contract arrangements. USDA's *1998 Agricultural Resource Management Study* (ARMS) reported that the value of products accounted for by contracting totaled \$67 billion, or 35 percent of the total value of commodities produced in the sector (table 1). Farms of all sizes use marketing contracts. Sixty-one percent of these farms were family-owned with gross sales of less than \$250,000, and they accounted for 20 percent of the total value of production under contract. As farms get larger, they tend to use more contracting to market and produce their products. Over half of the large family farms were involved in some type of contracting, and they accounted for 66 percent of the total value of commodities under contract. Nonfamily farms, such as cooperatives, nonfamily corporations, and farms with hired managers, can be of any size and accounted for another 15 percent of the total value of production under contract.

Over 90 percent of the total value of production under contract was accounted for by 10 commodity groups—corn, soybeans, vegetable, fruit, nursery, cotton, cattle, hogs, poultry, and dairy (table 2). While marketing contracts can be found in the livestock industry, they

Table 1

Use of contracting by type of farm, 1998

Contracting is common among all types of farms

Item	Unit	Small family farms	Large family farms	Nonfamily farms	All
Farms:					
All farms	Number	1,869,201	153,212	42,296	2,064,709
All farms	Percent	90.5	7.4	2.0	100.0
Farms with contracts	Percent	61.0	34.1	4.9	100.0
Value of production:					
Total	Million dollars	63,205	102,650	25,995	191,851
Contract value	Million dollars	12,911	44,035	10,144*	67,090
Production contracts	Million dollars	4,175*	17,624	5,413*	27,212
Marketing contracts	Million dollars	8,736	26,410	4,731	39,878
Share of contract value	Percent	19.2	65.6	15.1	100.0
Share of farms type with:					
Contracts	Percent	7.8	53.0	27.5	11.5
Production contracts	Percent	1.3	19.2	2.6	2.6
Marketing contracts	Percent	6.7	37.1	26.3	9.4
Value of production under contract	Percent	20.4	42.9	39.0	35.0

Note: Coefficients of variation (C.V.'s) of estimates are less than 25 percent unless indicated otherwise. The C.V. is computed by dividing the estimate's standard error by the estimate and multiplying by 100. Lower C.V.'s indicate more reliable estimates.

*C.V. is greater than 25 and less than or equal to 50.

Source: 1998 USDA *Agricultural Resource Management Study*.

are used in pricing many crops, particularly specialty crops such as fresh vegetables and fruit. More than 194,000 farms had at least one marketing contract during 1998. The share of commodities produced under marketing contract has increased slightly over the last few years, from 16 percent in 1991 to 21 percent in 1998. Topping the list of crops produced under marketing contracts were fruits and vegetables, with \$9.5 billion sold through contract, 45 percent of the value of all fruits and vegetables produced. Other crops with large shares of production value under marketing contract were cotton (\$2 billion or 50 percent); corn (\$2.4 billion or 12.5 percent); soybeans (\$2.1 billion or 11.7 percent); and sugar beets (\$1 billion or 76 percent). Almost all fluid milk is sold under marketing orders, but because neither a quantity nor a final price is set before the sale, milk producers may or may not consider the process a "contract."

Production contracts accounted for 14 percent of the total value of production in 1998 and approximately 3 percent of the farms had at least one production contract. Production contracts are used more on larger farms than are marketing contracts—and are more likely to be for livestock. Poultry and poultry products accounted for 55 percent of the total value of commodities under production contracts, and cattle and hogs another 36 percent.

Contracting Reduces, but Does Not Eliminate, Managerial Responsibility

Day-to-day management plays a key role in returns to farmers, even though, with contracting, the farmer's role in marketing and production practices may be limited. In animal production contracts, expert husbandry of the animals can positively contribute to the farmer's bottom line. And, contracting for a specific commodity is not the only decision that the farmer makes. In addition to producing for the cash market, farmers can and do have marketing and production contracts for the same or other commodities. And, farmers may contract with businesses or other farmers to gain access to inputs. For example, some farmers contract with other farmers for feed or replacement heifers. The farmer's skills in financial management, acquiring other inputs, coordination and management of

Table 2

Share of contract value of production for selected commodities, 1998

A few commodities account for most of the value of contract production

Commodity	Commodity share of all contract production	Share of commodity produced under contract
	Percent	
Corn	3.7	13.1
Soybean	3.2	12.2
Cotton	3.0	50.6
Vegetables	7.5	45.4
Fruit	8.7	56.7
Cattle	11.7*	25.3*
Hogs	5.5	42.9
Poultry	24.3	94.9
Dairy ¹	22.7	54.8
All other commodities	9.7	14.4
All commodities	100.0	35.0

Note: Coefficients of variation (C.V.'s) of estimates are less than 25 percent unless indicated otherwise. The C.V. is computed by dividing the estimate's standard error by the estimate and multiplying by 100. Lower C.V.'s indicate more reliable estimates.

*C.V. is greater than 25 and less than or equal to 50.

¹Fluid milk is typically produced under a marketing order. However, because neither price nor quantity is specified before sale, farmers may or may not consider this a "contract."

Source: 1998 USDA Agricultural Resource Management Study.

the production of other commodities, and allocation of time provide returns to successful entrepreneurship.

Not all aspects of contract arrangements are positive for farmers. Since contracts usually specify certain practices, the loss of entrepreneurial capacity is perhaps the largest disadvantage to the farmer. Contract risk may occur when prices in the open market exceed those specified by the contract, or the contract may be terminated on short notice. Contractors may require upgrades to buildings and other infrastructure, resulting in investment risk that may not be foreseen by the grower. Buildings, for example, may not be readily convertible to alternative uses if a contract is terminated. In addition, growers operating under a relative performance system may be at an unfair disadvantage, since companies may not have the incentives to maintain strict accuracy in the accounting and allocation of inputs among growers. Issues between growers and integrators have led to lawsuits on various occasions, and several States have adopted some form of legislation regulating production contracts in agriculture.

The poultry industry has been organized as a fully integrated supply chain since new technology in breeding, disease control, and grading eggs made large-scale commercial broiler production possible in the 1950's. From the hatchery to the grower to transportation to the processing plant and then to consumers, contracts coordinate the market. To reduce transportation costs for chicks and feed, farms cluster around contractor facilities. In addition, birds do not travel well, so having farms close to the primary processor reduces losses in transit. The close coordination of marketing with specialized complexes, complete with a well-developed infrastructure of local support services, now provides a competitive advantage for the southern regions of the United States.

Compared with other farms, broiler farms have lower net income, but the contract arrangements disguise some of the financial characteristics of contract farms. Farmers selling their products in the open market, by definition, receive the full market value of the product when it is sold. For broiler operations, however, the fees the farmer receives for caring for the chickens are different from the value of the chickens. Because contractors are intensely involved in the risks and expenses of broiler production—they own the birds and provide feed, medical services, management advice, and a market outlet—they earn a large proportion of the market value of the chickens.

Thus, the comparatively low sales and low income of broiler operations are somewhat misleading. Broiler farms with sales over \$50,000 have about half the asset investment of comparable size nonpoultry farms, mainly because the contractor owns the birds and provides most of the inputs. This sharing of the resources through contracts may provide avenues for young or beginning farmers to build their businesses with lower capital requirements. On average, broiler producers retained approximately 39 cents per dollar of gross sales versus 21 cents for nonpoultry farms. In addition, broiler farm households provided fewer hours to farm work (and more to off-farm work). Household income for broiler operations was 84 percent of the average for all U.S. households in 1997. Off-farm income is a higher proportion of their household income than on comparable farms. However, households associated with broiler operations had lower average income from off-farm businesses and unearned income (interest, dividends, Social Security, etc.) than comparable households without broiler enterprises. Lower household income of households with broiler operations can be attributed in part to broiler operators' lower average age and fewer years of education compared with other farm operators. And, Southern farmers may find poultry production an attractive employment alternative, given fewer off-farm employment opportunities than in Midwestern States.

Supply-chains have recently expanded to include the hog industry. Instead of farrow-to-finish operations, farmers can now specialize in each stage of production. Thus, the farmer and contractor share input costs and management expertise. Again, adoption of new technology has led to the increased use of contracts. Because technology has allowed farmers to reduce their costs by increasing pigs per litter and weight per hog, they can take advantages of economies of size and scope. Changes in the supply-chain

have fueled the growth of hog farms. The number of farms with more than 2,000 head of hogs increased from 29 percent in 1992 to 55 percent in 1997. With the increasing number of hogs produced, new markets were opened and exports have become increasingly important to the hog industry in the 1990's.

Contracting in the hog industry occurred very quickly. In less than 7 years, the industry went from about 10 percent of the hogs under contract to more than 50 percent (fig. 1). According to ARMS data, in 1998, the value of hogs under contract was \$3.7 billion, or 43 percent of the total hog value of production. Because of the longer life cycle of hogs, there is opportunity for contracting between each stage—breeding and farrowing, nursery, finishing, and processing. Under production contracts, integrators or other farmers move hogs from each stage of production to the next stage. With marketing contracts, processors buy hogs for slaughter from farmers or integrators. Farmers can and do have both types of contracts.

Contracts Change Market Structure

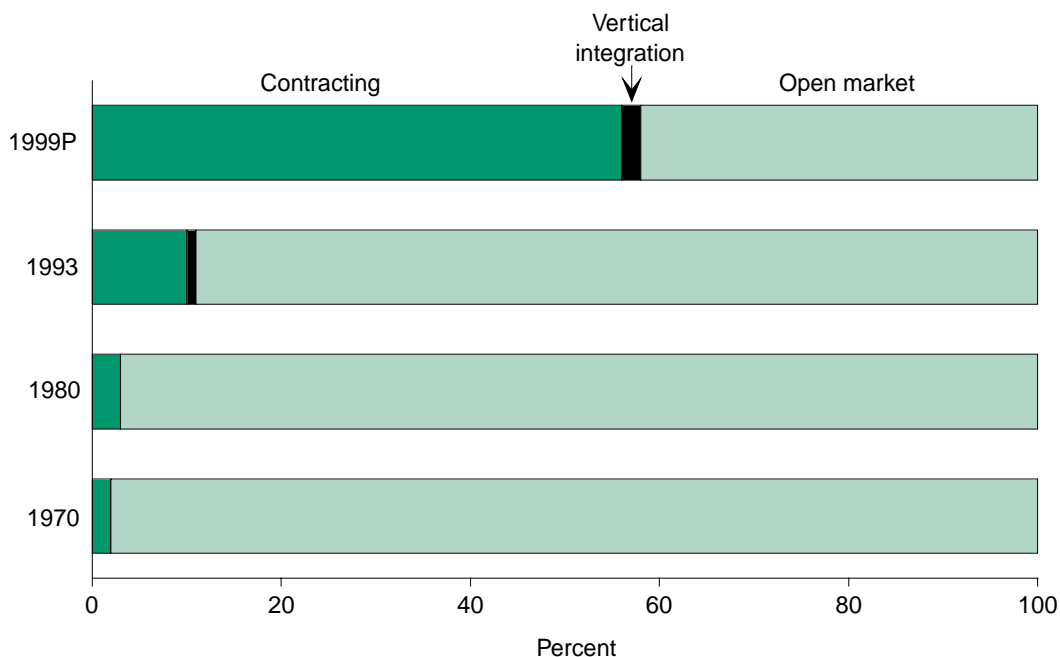
Economists use farmers as an example of classic price takers. Successful farmers typically survived by lowering their costs of production, actively marketing their products, and using strategies that helped them respond to changes in the market. Integration through contracts in the hog and poultry industry, and now in the grain industry, provides a way to lower costs, achieve access to the market, and respond to changes in consumer demands. But contracting changes the way that markets function. Intermediate prices are not visible as they are in an open market, and the only price that is public is the price to the consumer. Thus, competitors and researchers have a more difficult time measuring efficiencies in the production and intermediate marketing processes.

While economic incentives within agriculture continue to encourage structural change, environmental concerns, corporate farm laws, and conflict with nonfarm neighbors will help determine the direction of this change. Increased industrialization has environmental

Figure 1

Share of hog production by type of vertical coordination, 1970-99

Hog contracting increased rapidly during the 1990's



P=preliminary.

Source: Compiled by ERS from various studies. See Steve W. Martinez, *Vertical Coordination in the Pork and Broiler Industries*. AER-777, USDA/ERS, April 1999.

and social costs. Growth of large concentrated livestock operations near population centers may create conflicts over odor and waste disposal. In many areas, farm expansion may be limited because of farms' proximity to environmentally sensitive lands. In these areas, cost-saving opportunities through expanded production may become fewer. As population increases or environmental regulations prevent expansion, incentives may shift production back to more traditional producing areas or to new areas with opportunities for economic growth.

In addition to changing the way markets function and in the location of markets, contracting changes who does business. Contractors provide markets and may provide inputs and sometimes financing. Thus, a concern is that contract farms will be less likely to purchase inputs and market output in their local community. As farms consolidate and deal more exclusively with outside contractors, rural communities with close ties to commodities could have fewer farms and fewer businesses to keep the local economy healthy. Because farmers are sharing the value of production with other businesses, that shared portion of the profits may not benefit the local economy.

Contract production is likely to increase, despite concerns that opponents may voice. Industrialized agriculture has produced economic efficiencies through specialization, mechanization, mass production and lower transaction costs. Management of the production process continues to be consolidated. At the same time, the reduced dependence of communities on farming and related services (such as farm supply and equipment dealers, grain elevators, mills, and livestock markets) will continue a trend that has been underway for many years. These changes, however, do not mean that small communities must inevitably decline. Rural communities dependent on traditional farming may need to seek new sources of economic growth. Communities will need to explore opportunities to provide new services that meet the unique needs of farmers, such as market development, processing, packaging, transportation, and information.

Neither does contracting or vertical integration mean the end of the family farm. Ninety-eight percent of farms continue to be family owned and operated. Basic commodities will continue to be produced in massive quantities in the most cost-efficient manner, most often by large-scale family-owned operations. Rather than focusing on lowering production costs, or expanding operations, farmers can create market power by producing higher value, attribute-specific commodities that consumers demand. With recent advances in communications technology, such as the Internet, farmers will be able to participate in strategic alliances, formal contractual or similar arrangements to create linkages with businesses, and ultimately consumers, all over the world. *[Janet Perry, 202-694-5583, jperry@ers.usda.gov; David Banker, 202-694-5559, dbanker@ers.usda.gov]*

ERS Research on Contracting and Risk Management in Agriculture

Contracting, other forms of vertical coordination, and risk management have become more important in U.S. agriculture during the 1990's. ERS has published a number of reports on these important changes in how farms and agricultural businesses are managed. Many of the ideas and data summarized in this article are based on these reports, which are listed here for the interested reader. Each report was published by ERS and is available from the ERS web site.

Joy Harwood and others, *Managing Risk in Farming: Concepts, Research, and Analysis*, AER-774, March 1999.

<http://www.econ.ag.gov/epubs/pdf/aer774/index.htm>

Farm Business Economics Branch, *Farmers' Use of Marketing and Production Contracts*, AER-747, December 1996.

<http://www.econ.ag.gov/epubs/pdf/aer747/index.htm>

Janet Perry, David Banker, and Robert Green, *Broiler Farmers Organization, Management, and Performance*, AIB-748, March 1999.

<http://www.econ.ag.gov/epubs/pdf/aib748/index.htm>

Steve Martinez, *Vertical Coordination in the Pork and Poultry Industry*, AER-777, April 1999. <http://www.econ.ag.gov/epubs/pdf/aer777/index.htm>

William McBride, *Change in U.S. Livestock Production, 1969-92*, Economic Research Service, AER-754, July 1997. <http://www.econ.ag.gov/epubs/pdf/aer754/index.htm>